

I. Project Title:

Hydrographic data collection – FY 2002 site surveys, floodability assessments, design and engineering for habitat restoration along the Green River in Utah, the Colorado River in Colorado, and the Gunnison River in Colorado.

II. Principal Investigator(s):

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III. Project Summary:

The objectives of this work are:

1. To determine bankfull flood flows, with and without excavation;
2. To determine area of inundation as a function of flow, with and without excavation;
3. To compare historical versus existing frequency, duration, and timing of flood flows, with and without excavation;
4. To characterize pre-restoration baseline channel and site morphology, and post-restoration morphology; and
5. To develop design options for enhancing floodability and to assist with construction oversight.

A site owned by the Colorado Department of Transportation was surveyed in FY 2002. The reconnaissance survey, data collection and preparatory work for hydrologic analyses were completed. Topographic mapping and floodability analyses were initiated, and continue to be developed in FY 2003.

Hydrographic surveys and floodability analyses were performed at Thunder Ranch, formerly known as Escalante Ranch. Topographic data collected in FY 2002 were utilized to update the site plan.

Preparation of final reports and submittal of Regional General Permit 057 were completed for the Walter Walker, Butch Craig, and Grand Junction Pipe sites. Review of plans and proposed construction for these sites were discussed.

Because of low runoff flows during 2002, post-restoration erosion and sedimentation monitoring were not performed at any sites.

IV. Study Schedule:

Initial Year - FY 1995

Final Year - Unknown

V. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

II. Restore habitat

II.A. Restore flooded bottomland habitats

II.A.2. Screen high-priority sites for potential restoration/acquisition

GREEN RIVER ACTION PLAN: MAINSTEM

II. Restore habitat

II.A. Restore and manage flooded bottomland habitat

II.A.3 Implement levee removal strategy at high-priority sites

II.A.3.a. Pre-construction

II.A.3.b. Construction

II.A.3.c. Evaluation

COLORADO RIVER ACTION PLAN: MAINSTEM

II. Restore habitat

II.A. Restore and manage flooded bottomland habitat

II.A.4. Implement levee removal strategy at high-priority sites

II.A.4.a. Pre-construction

II.A.4.b. Construction

II.A.4.d. Evaluation

COLORADO RIVER ACTION PLAN: GUNNISON RIVER

II. Restore habitat

II.A. Restore and manage flooded bottomland habitat

II.A.2 Implement levee removal strategy at high-priority sites

II.A.2.a. Pre-construction

II.A.2.b. Construction

II.A.2.d. Evaluation

VI. Accomplishment of FY 2002 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1. Pre-acquisition floodability assessments:

Task 1a. Reconnaissance surveys: A site reconnaissance survey was performed at the Colorado Department of Transportation (CDOT) site. The CDOT site is a new site and is

currently being considered for use as habitat. A site reconnaissance survey was also performed at Thunder Ranch, formerly referred to as Escalante Ranch. Thunder Ranch habitat design is being reevaluated to reflect the recent water quality analyses and to investigate changes in channel morphology.

Task 1b. Data collection: Survey and data collection for the CDOT site were initiated in 2002. Data collection included river cross-section surveys and onsite survey shots for use in developing topographic mapping. A number of discharge measurements were also collected. Additional discharge measurements at high-flows will be required in FY 2003. Hydrographic surveys were also performed at Thunder Ranch in the spring of 2002. Work included approximately 500 topographic and hydrographic survey grade GPS measurements and resurvey of existing cross sections established in 1993. The survey included detailing potential inlet and outlet areas, utilities and structures, levees and roads, and a general survey of the floodable area. Additional hydrographic survey of the seeps at Thunder Ranch may be required depending on habitat design.

Task 1c. Analyses: Hydrologic analysis was initiated for the CDOT site in January 2002. Topographic mapping and a floodability analysis also began in 2002 but are currently on hold until further direction is given.

Analyses for Thunder Ranch were conducted to evaluate floodability under new habitat design considerations. Analyses included evaluation of the river cross-sections for stability as compared to past surveys (FLO Engineering 1993) and a hydraulic analysis to investigate alternative inflow locations and to compare water surface elevations with past studies. The site plan for Thunder Ranch was updated using topographic data collected in 2002.

Hydraulic analyses were also conducted for Grand Junction Pipe (GJP), to evaluate modified designs proposed for this site

Final reports were prepared for Walter Walker (WW), Butch Craig (BC) and Grand Junction Pipe (GJP) sites for use in NEPA.

Task 2. Design and engineering:

Design and engineering in 2002 included civil design, details and specifications, permit preparation, and contractor coordination. Plans and specifications were developed for the BC and GJP sites starting in January 2002. Preparation, revisions, and Regional General Permit 057, issued under the authorities of Section 404 of the Clean Water Act, were also completed for WW, GJP and BC.

A meeting was attended in Denver to review GJP and discuss Thunder Ranch. Efforts this year also included coordination with Dave Soker and Terry Ayer on the survey of Thunder Ranch.

Task 3. Construction oversight:

Preparations for and attendance at a meeting in Grand Junction took place in August. The purpose of the meeting was to identify any remaining issues or concerns and to concur with proposed enhancements. The discussion also involved reviewing plans and proposed construction for the WW, BC and GJP sites.

VII. Recommendations:

The monitoring of water surfaces and erosion and sedimentation at the bottomland and river cross sections should continue in 2003 and beyond. All sites that receive significant flows in the spring of 2003 should be monitored during peak flow. Monitoring the reaction of the river and bottomlands to various constructed configurations will provide valuable data that can be referenced in refining engineering design for future bottomlands restoration. All constructed sites that receive design flow in the spring of 2003 should also be evaluated for effectiveness and design modifications. Other potential sites should be surveyed, analyzed and assessed similarly to those bottomlands that have been previously evaluated.

It is recommended that sites along the Green River, constructed between 1995 and 1999, be visited this spring to evaluate site configurations relative to the designs, note the health of vegetation, photograph the site and record site observations. A memo will be forwarded locating specific sites that are recommended for evaluation.

It is also recommended that additional discharge and water surface measurements be collected at the CDOT site on the Colorado River.

VIII. Project Status

The project should be considered on-track and ongoing. Funding needs may be increased for increased civil design, review of design, and assessment of additional sites as they are identified.

IX. FY 2002 Budget Status

- A. Funds Provided: \$101,667.43
- B. Funds Expended: \$ 84,804.40
- C. Difference: \$ 16,863.03
- D. Percent of the FY 2002 work completed, and projected costs to complete:
Completed 83% of FY 2002 work
- E. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission (Where applicable): Not applicable

XI. Signed: Peggy M. Bailey, P.E. 11 Dec 02
Principal Investigator Date

REFERENCES

- Carey, Jason. Memorandum to Pat Nelson. 27 February 2002.
- Carey, Jason. Memorandum to Pat Nelson and Dave Soker. 3 June 2002.
- Tetra Tech, Inc. 2002. Floodplain Habitat Restoration: Walter Walker (WW) Site, Colorado River near Grand Junction, Colorado; Flood Inundation Study Final Report. Prepared for U.S. Fish and Wildlife Service and Bureau of Reclamation. August 2002.
- Tetra Tech, Inc. 2002. Floodplain Habitat Restoration: Grand Junction Pipe (GJP) Bottomland Site, Colorado River near Grand Junction, Colorado; Flood Inundation Study Final Report. Prepared for U.S. Fish and Wildlife Service and Bureau of Reclamation. August 2002.
- Tetra Tech, Inc. 2002. Floodplain Habitat Restoration: Butch Craig (BC) Bottomland Site, Gunnison River near Delta, Colorado; Flood Inundation Study Final Report. Prepared for U.S. Fish and Wildlife Service and Bureau of Reclamation. August 2002.
- FLO Engineering, Inc. 1993. Green River Escalante Wetlands and Razorback Sucker Spawning Reach Hydrologic Study Near Jensen, Utah. Prepared for U.S. Fish and Wildlife Service/National Park Service. December 1993